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Social Desirability, Opportunism and Actual Support for Farmers' Market Organisations in Ethiopia

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ABSTRACT *One of the striking issues in the literature on farmers' market organisations (FMOs) is that farmers generally report quite positive opinions regarding the services of their FMO, while, at the same time, actual sales reveal a much more reserved attitude. We argue that farmers may feel social and/or opportunistic pressure to express positive opinions concerning the FMO, to donors and policy-makers, which are not necessarily in line with their actions. This article proposes a list experiment method to control for this bias. The method shows that especially farmers who express strong support for the FMO seriously hesitate to speak freely.*

1. Introduction

A relatively large body of literature addresses the performance of co-operatives in Ethiopia. For example, Abebaw and Haile (2013) show that these organisations have a positive impact on farmers input use and the adoption of agricultural technologies, while Bernard, Tafesse, and Gabre-Madhin (2008b) conclude that co-operatives obtain higher prices for their members. However, to date the overall performance of these organisations in Ethiopia and many other developing countries are quite disappointing (Bernard, Spielman, Tafesse, & Gabre-Madhin, 2010; Fischer & Qaim, 2012; Markelova, Meinzen-Dick, Hellin, & Dohrn, 2009; Poulton, Dorward, & Kydd, 2010). Many of these farmers' market organisations (FMOs[1]) seem to survive but the desired entrepreneurial growth in activities is missing (Bernard et al., 2008b; Naldi & Davidsson, 2014). In their review of the performance of agricultural co-operatives in Ethiopia Tefera, Bijman, and Slingerland (2016) conclude that the impact of commercialisation on farmers' welfare is inconclusive, and that both the institutional environment and the internal governance structure find it difficult to adjust to changing economic conditions.

Although the perception of farmers regarding the performance of their FMO seems to be quite positive, only 44 per cent of the members in our survey actually sell to the co-operative. However, even farmers who do sell to the co-operative supply only a limited share of their marketable surplus and are largely involved in side-selling to the private market (Wollni & Fischer, 2015; Mujawamariya, D'Haese, & Speelman, 2013). Many explain their actions by disclosing that the co-operative did not buy when the

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farmer needed the money (self-reported argument). This, however, does not provide a full explanation, as dedicated members of the FMO can be expected to do everything to sell through the FMO. Similarly, agile FMOs are expected to be able to arrange financial constraints and to develop contracts with buyers in the wholesale market, in particular in Ethiopia where the economy is growing rapidly and urban food markets are developing fast (Collier & Dercon, 2014; Minten, Stifel, & Tamru, 2014; Tadesse & Shively, 2013). We observe that there is hardly any development of these more entrepreneurial activities. FMOs mainly sell through their unions, a fixed business model focusing on the benefits rooted in economies of scale, while innovative business models and local initiatives barely take off.

These findings raise the question of whether the farmers appreciate the role and performance of the FMO. In this article, we scrutinise the reported perception of farmers regarding the services of their FMO. When asked directly about the usefulness of the FMO, the majority of the farmers responds positively; many seem to endorse the idea of an FMO. This may, however, be a socially desirable response that is not necessarily in line with their actions or selling behaviour. In fact, most farmers do not sell to the FMO. It may also be that their positive response reflects opportunistic behaviour, as the farmers certainly have no interest in disapproving donor investments in an organisation from which they may at some point benefit.

We argue that opinions derived from direct questions give a biased upper bound of support for FMO activities, while revealed actions provide a biased lower bound of support. The lower bound is biased as farmers do not always have a marketable surplus and FMOs are not always able to serve farmers at the right time: for example the FMO does not always buy/sell when the farmers have to sell/buy. Another disadvantage of measuring actual use is that the information cannot be used ex ante, that is it is only after having supplied the services that use of FMO services can be measured. Perceptions can be measured ex ante and direct FMOs towards the most needed types of activities. In such case the upper bound bias may confound observations due to the sensitivity of the questions regarding FMO performance.

Reliable information about farmers' perceptions is important as it may help donors and governments to focus their activities towards vital initiatives. However, if target groups are simply asked whether they 'like it or not', it is appealing for many farmers to simply confirm, leading to the false impression that they will actually use these services. We argue that this phenomenon partly explains the reality concerning FMO performance in Ethiopia. Our method shows that in particular strong believers (supporters) may not express their true feelings when asked directly about their perception of FMO performance. Opportunistic behaviour or social pressure to provide a supportive answer may result in biased responses that obscure reality.

This paper provides two major contributions. First, we tested the influence of social desirability and opportunism on farmers' answers to direct questions regarding the importance of FMOs. We designed a list experiment to test their real feelings regarding the co-operative. Second, several groups were distinguished to see whether there were differences in the response bias: members versus non-members, and believers (supporters) versus non-believers.

2. The method: disentangling social desirability and real perceptions

When asking questions about a sensitive issue, there are different survey methods to cope with the problem of bias in self-reported answers. New qualitative solutions have been proposed by Blattman, Jamison, Koroknay-Palicz, Rodrigues, and Sheridan (2016) to study the direction and magnitude of the survey measurement error in the dependent variable when evaluating interventions implemented in Liberia to reduce violence and crime. Quantitative survey methods that include the randomised response technique (Warner, 1965) and the endorsement experiment (Bullock, Imai, & Shapiro, 2011) have been widely used. A third method is the list experiment. In this paper, we design a list experiment to indirectly ask respondents about their perception regarding the performance of the FMO in the village. We chose this method as it can be integrated relatively easily into a larger survey and fits the type of sensitive issue under study. More qualitative approaches are indeed needed when the issue is more delicate (for example involvement in criminal acts).

The idea behind a list experiment, also called item count or unmatched count technique, is that a respondent will give a truthful response when a sensitive question is asked indirectly. The method presents respondents with a list of statements and asks them to count the total number of statements they support/reject. The respondents are randomly divided into a control group and a treatment group. The control group respondents receive a list of non-sensitive items. The treatment group respondents receive the same list of non-sensitive statements plus one sensitive item. The difference in the mean number of supported (rejected) statements between control and treatment group identifies the proportion of people in the population that (dis)agree with the sensitive item. The list experiment technique has been mainly used in political science to understand voters' attitudes and racial attitudes (for example Kuklinski, Cobb, & Gilens, 1997; Redlawsk, Tolbert, & Franko, 2010). More recently, it is also applied in economics to study sensitive matters. In microfinance, for example, Karlan and Zinman (2012) use a list experiment to understand how people spend their loan proceeds, showing that direct elicitation underreports the non-enterprise uses of loan proceeds. Similarly, Eriksen and Lensink (2015) find that often loan proceeds are not spent productively. These studies consider a difference in means estimator to analyse the list experiment. This, however, does not allow for the identification of the relationship between preferences over the sensitive item and the respondents' characteristics. Moreover, the effect of social pressure on the responses to direct sensitive questions may differ among groups.

In the survey we designed our list experiment as follows. The enumerators provided some explanation of the procedure before the statements were provided:

> 'I want you to give me a secretive answer to the following statements. I give you 3(4) stones and ask you to hold them in your right hand while keeping both hands on your back. If you agree with the statement I will read to you, you will transfer one stone to your left hand behind your back (I will not see it, and you must not tell me either). If you don't agree with the statement, do not transfer a stone. At the end, I would like to know the number of stones in your left hand, that is the number of statements you agree with. I will now read the statements.'

Four statements were read to sub-sample A (the treatment group).

(1) Private traders in my kebele generally cheat
(2) Access to proper seeds for farmers is badly organised
(3) The road infrastructure in my kebele makes it difficult to transport my crop
(4) The FMO is a weak organisation as important decisions are not made by its members

Three statements were proposed to sub-sample B (the control group).

(1) Private traders in my kebele generally cheat
(2) Access to proper seeds for farmers is badly organised
(3) The road infrastructure in my kebele makes it difficult to transport my crop

Control statements 1, 2, and 3 were chosen after consultation with local fieldworkers and tested in a pilot study. Although the control items concern serious issues regarding access to markets, the farmers' assessment of these issues is not sensitive as they are beyond the control of local representatives. In the context under study social pressure may lead to a social desirability bias regarding statement 4, as the FMO is led by local representatives. It is expected that many respondents feel some social pressure to give these local FMO leaders the benefit of the doubt when direct questions about the importance of the FMO are asked.

Local solidarity or social pressure may lead to a bias in reported perceptions as a result of social desirability to abide by the expected local norm. Moreover, it is very possible that opportunism and self-interest further confound the result of direct sensitive questions. Farmers may be well aware of the fact that it is always better for them to have access to a local FMO if the perceived costs for the

individual farmer are negligible. Even if this organisation is not performing well at present, it may be an interesting outlet in the future. Opportunism and self-interest may make it more compelling to give in to social pressure, which further fuels the bias in reported perceptions. The proposed list experiment is expected to control for these effects through its indirect design to collect data about the sensitive issue.

This design relies on three important assumptions (Imai, 2011). The first assumption is the randomisation of the treatment, meaning that the sample is randomly divided into control and treatment groups, and it implies that potential and truthful responses are jointly independent of the treatment variable. Random selection of the farmers for the control and treatment groups, as explained in the following sections, addresses this assumption. The second assumption, the no-design effect, implies that the addition of the sensitive item does not change the sum of affirmative answers to the control items. The third assumption is referred to as 'no liars' and implies that the respondents respond truthfully to the sensitive item. We expect that farmers are not aware of the mechanism behind the list experiment and, consequently, do not consciously manipulate their answers. If these assumptions are correct, the indirect interview format allows us to control for the sensitivity bias.

3. Data collection

We collected the data as part of an impact study of a project supporting FMOs in the Oromia region (see Section 4) and conducted a survey among farmer households to measure the effects of the project. The list experiment was part of the end-line survey (October/December 2014). The questionnaire addressed characteristics of the household and the farming system, and consisted of eight blocks of questions: household composition, household assets, land and crop production, livestock, access to markets and marketing, the FMO and its services, non-farm income and household expenditures, and food security. In this paper, we focus on the results of the list experiment that was part of the questions concerning the FMO and its services.

The FMOs were selected in two steps (Table 1): first the woreda (district) and then the FMO in a specific kebele (village). The woredas were chosen purposively to get a good representation of the districts in the Oromia region and, subsequently, within the woredas the FMOs were selected randomly. We sampled four FMOs from Arsi Negele and Shashemene because of the large number of FMOs in these woredas. We intended to interview 16 non-members and 32 members in the same kebele to avoid heterogeneous groups in terms of crops, productivity, access to markets, roads, and so forth. Non-members in these villages can be expected to have an opinion about FMOs as the organisation is operational in their kebele. Note that an FMO is organised per kebele. In total we were able to interview 683 respondents for this study. The fact that the actual number of respondents per kebele deviates somewhat from the targeted number is explained by three factors. First, in some villages and in particular in Shashemene, it was difficult to find non-members due to the fact that the required investment for membership was quite small (a onetime fee of 50–100 Birr, 4–8 USD) and social pressure to become a member was strong. Second, sampling of members and non-members was done on the basis of information provided by the FMO. During the interviews, it sometimes became clear that a member (non-member) considered himself or herself a non-member (member). The third reason is attrition in the end-line survey, as some farmers interviewed in 2012 deceased or moved to another village.

4. FMOs in Ethiopia and the Oromia region under study

The government of Ethiopia supports the establishment of producer co-operatives as a means of strengthening and empowering smallholders' market participation in the liberalised market environment (FDRE, 2005). In the adopted Agricultural Growth Program (AGP), the highest priority is given to the formation and strengthening of agricultural co-operatives.

Table 1. Full sample list experiment

		Full sample size		
Woreda	Kebele/FMO	FMO members	Non-FMO members	Involved local NGO
Sinana	Kituma	37	6	HUNDEE
	Bikilitu	36	7	HUNDEE
Jeldu	Suqui Wageyo	31	8	HUNDEE
	Goda Racha	35	13	HUNDEE
Seddan Sodo	Siba Robe	34	9	FC
	Wuli Gotera	29	10	FC
Dewo	Feyine	31	16	FC
	Rimmessa	27	12	FC
Arsi-Negele	Abdi rabii	32	15	ADAA
	Hawi Gudina	34	14	ADAA
	Borata gaalo	25	21	ADAA
	Gadisa Dahmota	27	17	ADAA
Shashemene	Dolu Karsa	40	0	CDI
	Jalela	46	0	CDI
	Meda-Gudina	31	3	CDI
	Awara Badessa	36	1	CDI
Total		531	152	

Tefera et al. (2016) provide an overview of the co-operative movement in Ethiopia and they distinguish five phases with different forms of policy support. In the 'initiation' period (1950–1974) a co-operative programme was established to improve the rural economy. The authors conclude that its impact was limited in scope and experience. During the phase of the 'planned economy' (1974–1991) the outreach expanded, and co-operatives were characterised by collective ownership and state control. However, at the end of the period, most co-operatives collapsed together with the regime. The next phase was called 'institutional renewal' (1991–2005): many co-operatives were dissolved, but from 1994 onwards the government established new policies to strengthen co-operatives. This transition period was followed by the phase of 'rural innovation' (2005–2010) where the policies supported co-operatives to provide inputs and services. The last phase is called 'market integration and value chain development' (2010–present), broadening the scope of the policies not only to input markets but also to output markets and value chains.

The changes observed in Ethiopia are also reflected in a larger body of literature showing that farmers' market organisations reappeared on the international development agenda (Bernard, Collion, De Janvry, Rondot, & Sadoulet, 2008a; Bernard et al., 2010; Fischer & Qaim, 2012; World Bank, 2007). At present policy-makers consider these organisations as important instruments linking farmers to markets, increasing agricultural productivity, and ultimately reducing rural poverty (Barham & Chitemi, 2009; Markelova et al., 2009). The empirical study by Bernard et al. (2010) on co-operatives in Ethiopia concluded that co-operatives secure higher prices for their members' output although this does not necessarily lead to an increase in the quantity of output commercialised by the members. They also conclude that the poorest of the poor tend to face considerable constraints on membership in market co-operatives. However, poorer non-member households still benefit from positive spillovers. Finally, it is observed that most co-operatives are seriously resource-constrained, and that management is weak. Most organisations 'survive' and it is quite rare to find a fast-growing co-operative developing a successful new business model. Francesconi and Heerink (2010) focus on FMOs in Ethiopia and indicate that their performance is somewhat more encouraging.

In Ethiopia about 12 per cent of the farmers are members of a market-oriented co-operative (Bernard et al., 2010). The FMOs try to increase the number of members as this is expected to augment their turnover and the possibility to realise profits and/or better prices for members. Inclusion is an important element of this strategy and it is strongly supported by policy-makers, local NGOs, and

their donors. As a result of the inclusive development strategy, farmers are asked to invest only a small amount of resources if they want to become a member in order to avoid the ex-ante effort becoming a selection mechanism. Consequently, these FMOs levy a small membership fee and do not oblige farmers to sell, or to participate in meetings or other co-operative activities. Membership has no consequences for the farming system (for example the choice of crops, the use of specific inputs). Moreover, the marketing services of the FMOs are open to non-members (for example the sale of crops, the purchase of inputs). Due to the inclusive approach and the subsequent large number of members, management of the co-operative can be quite a challenge.

Since 2008 a consortium of six NGOs (Table 1) has implemented the project 'Promotion of Farmers Market Organizations Competitiveness on Agricultural Commodity Value Chains'. The main activities concerned designing and providing tailor-made assistance for capacity building of FMOs, supporting the formation and strengthening of unions, linking farmers organisations with chain actors and chain supporters, introducing new high-value crops, supporting locally initiated rural service providers, and capacity building of pro-poor and gender sensitive agro-business.

The FMOs are located in four zones of the Oromia region. The districts (woredas) represent three major farming systems: a wheat-barley based farming system represented by Sinana and Jeldu, a wheat-maize based farming system represented by Arsi Negele and Shashemene, and a teff-pulse based farming system represented by Seddan Sodo and Dewo. Food crops provide these farmers with their major source of income. The marketable surpluses are sold on domestic food markets to local traders in the villages, on regional markets, or to the co-operatives and their unions.

The descriptive statistics (Table A1 in the Appendix) show that the large majority of the interviewed household heads are male. The average age of the household head was about 46 years. The average number of adults in the households was between three and four, and the average total number of persons in a household was about seven. On average, the respondents received approximately four years of schooling; 30 per cent of the respondents were illiterate. The main occupation for nearly all interviewees was farming, and these farmers owned about three hectares on average. The reported balancing tests showed that only minor differences between the respondents of the control and the treatment group of the list experiment were observed.

5. The use of provided services and perceptions regarding the FMO

Table 2 provides information about the selling and buying behaviour of farmers. About 25 per cent of all members buy fertilisers through the FMO. Remarkably, in the previous year only 44 per cent of the members sold output to the FMO. As expected, this percentage is significantly lower among non-members. The FMOs generally sell through their unions. We did not come across any examples of FMOs that developed extensive business relationships with private traders/processors in the market. Some FMOs realised spot-market transactions with private traders, but these contacts were not used to develop long-term business relationships or new business models. In line with Bernard et al. (2010), we observe that the managerial capabilities of FMO representatives are weak, and that all co-operatives are severely resource-constrained. None of the FMOs under study developed their actions on the basis of a strategic plan. These managerial capabilities were more developed at the level of the unions, although these larger units were still in the start-up phase, facing more bureaucratic challenges, and struggling to create a position next to the multipurpose co-operatives and private traders. All FMOs expressed the need for a larger member-base. More scale in their business was observed to be a key challenge for the future of their organisation. A rise in the number of members was seen as the best way to realise this. Interestingly, no reference was made to a potential increase in the commitment of the existing member base – in particular the 56 per cent of the members who did not sell to the FMO.

Most of the output was sold to private traders. We calculated this figure for the four main crops (teff, wheat, barley, maize), also the main crops targeted by the FMOs. Some spillover effects became clear as non-members living in the FMO village also sold to the FMO. We asked farmers who had sold to

Table 2. Use of FMO services: buying, selling, and training

	Total		Members		Non-members		Balancing tests
	N	Mean	N1	Mean	N2	Mean	(4)-(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Buying inputs from the FMO							
Fertiliser (%)	683	0.23	531	0.25	152	0.14	−0.106*** (−2.76)
Sales to the FMO							
Have you sold to the FMO last year? (%)	683	0.40	531	0.44	152	0.23	−0.212*** (−4.79)
Average quantity sold to FMO quintals/4 crops	199	7.46	174	7.31	25	8.56	1.254 (0.38)
Average quantity sold to traders quintals/4 crops	477	14.00	359	15.67	118	8.90	−6.772 (−1.26)
Average value sales to FMO/4/crops (Birr)	199	6,378	174	6,332	25	6,703	371.313 (0.14)
Average value sales to private traders/4 crops	477	10,629	359	11,179	118	8,957	−2221.79 (−0.72)
Use of services							
Training on agricultural production (%, yes = 1)	683	0.43	531	0.53	152	0.08	−0.448*** (−10.62)
Training on marketing and business (%, yes = 1)	683	0.43	531	0.53	152	0.08	−0.446*** (−10.58)
Did you receive any price information? (%, yes = 1)	683	0.41	531	0.51	152	0.08	−0.430*** (−10.16)

Notes: Columns 4 and 6 present the mean of the members and non-members, respectively. Column 7 shows the coefficient from a balancing test between the two groups. T-stats in parentheses ***Significant at the 1 per cent level. **Significant at the 5 per cent level. *Significant at the 10 per cent level. We counted the total average quantity and value for the four major crops, all cereals, together: maize, barley, teff, wheat.

private traders why they did not sell to the FMO. A large majority indicated that the FMO did not buy at the time of selling. Some indicated that the quality was rejected, and a slightly bigger group explained that the price was not interesting.

Over 50 per cent of the members used the FMO in the previous year to receive training on agricultural production, on marketing and business, and on price information. For these services the spillover effects are quite low. Only a few non-members indicated that they got access to these services through the FMO. We also asked farmers to rate the quality of the trainings and price information. Only a few respondents stated they were not satisfied, while a large majority indicated that they appreciated the services.

Table 3 provides information about perceptions regarding the role of the FMO. On average, we observed quite some support for the cooperative. About 50 per cent of the members agreed or strongly agreed with the statement that the FMO is the preferred buyer for their crops. They also agreed that the FMO strengthens the position of farmers in the market and that they obtain better prices thanks to the FMO. About 63 per cent of the members rejected the statement that the FMO is a 'weak' organisation, and a majority confirmed that the existence of the FMO makes access to market information easier and agree that the major purpose of FMOs is to provide good selling opportunities. In general, we observed that the members were somewhat more positive about the FMO than the non-members in the same FMO village. However, most differences are not significant. The members did have a somewhat stronger preference for the FMO as a buyer (3.9 versus 3.4).

Taking into account the fact that only 12 per cent of the farmers are members (Bernard et al., 2010) and that only 44 per cent of the members actually sell to the FMO, we conclude that the results presented in Table 3 are somewhat confusing. On the one hand, it is disturbing that the majority of the members still do not sell through the FMO and that most of the surplus is sold to private traders. Acknowledging that the FMOs have been getting donor support since their establishment (usually more than 10 years ago), critical observers may claim that the performance is quite disappointing: the low market shares indicate that FMOs are organised inefficiently and not competitive in comparison to private traders. On the other hand, the results regarding perceptions show quite some support for the FMOs. Advocates will use this outcome and claim that it should be possible to increase farmers' commitment and improve the operations of the FMOs.

This obviously raises the question of how valid the perceptions measured through direct questions are and to what extent opportunistic behaviour or social pressure may bias the results. This is a crucial matter for FMO management and donors. A strong belief (perception) in the organisational strength of the FMO is needed for a committed member base and is one of the pre-requisites of an entrepreneurial FMO. In the next section, we analyse the perceptions regarding the organisational strength of the FMO through the use of a list experiment.

6. Social desirability and perceptions regarding the organisational strength of an FMO

As described in Section 2 we asked the respondents to participate in a list experiment to assess their perceptions regarding the FMO organisation. The key statement was formulated as follows: 'The FMO is a weak organisation, as important decisions are not made by its members'. This statement addresses a major issue in the Ethiopian context as many decisions are influenced by external stakeholders. The government constrains the possibilities to create FMOs through formal institutions. Moreover, NGOs and local governments are involved in the establishment, selection, and decision-making process. Some respondents may recall similar experiences in the past when a blueprint organisational structure was imposed by the (local) government without consent of the targeted members.

Despite the role of external stakeholders, FMOs in the villages operate under local management by villagers who see the organisation as an instrument to strengthen the position of farmers on the market. The villagers know each other, and therefore there may be social pressure to reject the formulated

Table 3. Perceptions regarding the FMO

	Total		Members		Non-members		Balancing tests
	N	Mean	N1	Mean	N2	Mean	(4)-(6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Perceptions (1 = totally disagree, 3 = neither agree nor disagree, 5 = totally agree)							
The FMO is the preferred buyer (end-line)	682	3.80	530	3.92	152	3.39	−0.527*** (−4.17)
The FMO strengthens the position of farmers (end-line)	683	3.59	531	3.61	152	3.55	−0.054 (−0.41)
Better prices are received through the FMO (end-line)	683	3.61	531	3.67	152	3.31	−0.252* (−1.90)
Perceptions (yes = 1)							
The FMO is a weak organisation as important decisions are not made by its members	683	0.37	531	0.37	152	0.34	−0.03 (−0.69)
Thanks to the FMO access to market information is easier	683	0.62	531	0.63	152	0.57	−0.062 (−1.40)
Major purpose of the FMO is access to inputs/cons. goods	683	0.64	531	0.64	152	0.62	−0.022 (−0.49)
Major purpose of FMO is providing good selling opportunities	683	0.79	531	0.79	152	0.76	−0.038 (−1.01)

Notes:Column 4 and 6 present the mean of the members and non-members respectively. Column 7 displays the coefficient from a balancing test between the two groups. T-stats in parentheses. ***Significant at the 1 per cent level. **Significant at the 5 per cent level. *Significant at the 10 per cent level.

Table 4. Data for the list experiment

	Control group		Treatment group	
Response value	Frequency	Percentage	Frequency	Percentage
0	34	9.47	13	4,01
1	139	38,72	83	25.62
2	125	34,82	122	37.65
3	61	16,99	82	25.31
4			24	7.41
Total	359		324	

Note: This table presents the frequency and percentage of respondents for each response value.

statement. Moreover, it is very well possible that more opportunistic respondents simply deny this problem as the FMO may provide interesting opportunities in the future.

Before presenting the results of the list experiment, we evaluate its design (Table 4). Floor and Ceiling Effects play a minor role. Of the 359 observations in the control group, only 9.47 per cent reported 'no' to all of the presented statements, while 16.99 per cent showed support for all of the statements. We also checked for the so-called design effect, which is present when an individual's response to a non-sensitive item changes depending on whether or not the sensitive item is present. For the difference in means estimator to be valid, the mean 'yes' response to the non-sensitive items must on average be the same for both treatment and control group (Imai, 2011). As shown by Blair and Imai (2012), we can apply the *List* package in R to test for design effects. With a p-value of 1, we find no evidence for rejecting the null hypothesis of no-design effects.

Table 5 presents the results of the list experiment and the direct question. About 37 per cent of the respondents support the statement when a direct question is posed. In a list experiment format, over 47 per cent of the respondents support the statement that the FMO is a weak organisation. The Z-test statistic for the difference in proportions shows that the difference is highly significant. In column 2 (Table 5) we do the same analysis for the subgroup of FMO members: it shows that the bias increases to 12.4 per cent.

In our search for a further specification of the group that provides biased answers we checked whether those who indicated in the survey that they strongly support the statement 'The FMO strengthens the position of smallholders in the market', are more biased than those who are more reserved regarding the positive effects of the FMO.[2] In Table 5 we distinguish two sub-groups: those who 'totally agree' or 'agree' with the statement that the FMO strengthens the position of smallholders (column 3) and those who do not agree. The list experiment results show that the bias concerning the direct question regarding the weakness of the FMO is more important among supporters: approximately 20 per cent do not reveal their true perception[3] if the question is posed directly. It appears that for opportunistic reasons or due to social pressure, quite a number of the strong supporters do not express their real opinion. Members indicating support for the statement that the FMO strengthens the position of farmers show a similar bias (column 4). Interestingly, the observed bias does not further increase when members only are taken into account. We already noted that the small membership fee is a weak signal for the willingness to support the FMO. Open access to FMO services further weakens the membership signal, and this may explain why, contrary to expectations, the bias is similar among members and non-members supporting the FMO.

We need to make two remarks regarding the subgroup analysis presented in Table 5 (columns 2–4). First, we acknowledge that the tests can be underpowered if the subgroups are small; data limitations do not make it possible to address this point. Furthermore, the difference in means approach does not allow us to adjust for multiple covariates at the same time. However, Imai (2011)[4] proposes a multivariate regression technique to address this problem. He developed a maximum likelihood estimator that estimates the joint distribution of the number of control items a respondent supports

Table 5. Bias observed through a list experiment

	Sub-group:	Whole population	Members only	Support (4–5)	Members only + support (4–5)
		(1)	(2)	(3)	(4)
Direct report:					
-Proportion of people reporting that the FMO is weak		0.366	0.373	0.289	0.294
	SE	(0.018)	(0.021)	(0.021)	(0.024)
	N	683	531	446	354
List experiment:					
-Mean of 'yes' responses for the short list		1.593	1.569	1.587	1.585
	SE	(0.046)	(0.055)	(0.058)	(0.067)
	N	359	274	223	177
-Mean of 'yes' responses for the long list		2.065	2.066	2.072	2.068
	SE	(0.055)	(0.062)	(0.067)	(0.077)
	N	324	257	223	177
Difference (proportion of people reporting FMO is weak)		0.472	0.497	0.484	0.480
-SE of difference		(0.071)	(0.083)	(0.089)	(0.102)
-p-value from t-test		0.000	0.000	0.000	0.000
	N	683	531	446	354
Comparison of direct question and list experiment. List experiment minus direct report		0.106***	0.124***	0.195***	0.186***
Z-test statistic for difference in proportions		3.951	4.002	4.501	5.093

Notes: Direct report is the answer (yes/no) to the direct question 'The FMO is a weak organisation, as important decisions are not made by its members'. In order to be able to identify the sub-groups for column 3 and 4, each respondent was asked to rate the statement 'The FMO strengthens the position of smallholders in the market'. By using a Likert scale the respondents expressed strong support (5), support (4) or no support (1,2 and 3) for the FMO. A z-test is applied to test the difference in proportions obtained through the direct report and through the list experiment. Applying a t-test to test the difference between the two groups would yield an incorrect answer, as a t-test would test for a difference in means rather than a difference in proportions. Standard errors in parentheses. * Significant at 10 per cent. ** Significant at 5 per cent. *** Significant at 1 per cent.

and the respondent's truthful answer to the sensitive item. The first step of his approach yields coefficients for predicting the number of non-sensitive items a respondent will support as well as the likelihood that the respondent will support the sensitive item. Thus, allowing us to relate several respondents' characteristics to their answers to the sensitive question if identical control questions are asked to both the treatment and the control group (Blair and Imai, 2012). This first set of predicted probabilities can be thought of as being free of social desirability bias. The following step is to use a standard logit regression considering only responses to the direct question, to generate a second multivariate model of support for the sensitive item. Again, results of the model are used to generate predicted probabilities as a function of respondent characteristics. These estimates, since they do not rely on responses to the list experiment, can be thought of as being contaminated by social desirability bias (should such be present). The differences between the two sets of estimates can then be plotted with their corresponding confidence intervals to assess statistical significance, and facilitate interpretation (Figure 1).

In Table 6 the Imai approach is applied. We include gender, age, years of education, main occupation, land owned, distance to the co-operative, a dummy for membership, a dummy indicating strong support, and interaction of the two dummies.[5] We use the *R* package designed by Blair and Imai named *List* to estimate both models.

The results from the first model (using only responses from the list experiment) are presented in columns 1 and 2 of Table 6. The coefficients in the column of the sensitive item predict whether a respondent will answer 'yes' to the sensitive item in the list experiment. The coefficients in the control item column predict the number of non-sensitive items supported. Again these two columns together form a set, reflecting the results of the list experiment in which the social desirability bias is absent. The final column displays the results of a standard logit model that only makes use of the data from the direct question, and is thus contaminated by social desirability bias. The results of the List experiment

Table 6. Multivariate analysis of the list experiment and the direct question

	Sensitive item Est. (SE)	Control items Est. (SE)	Direct question Est. (SE)
VARIABLES	(1)	(2)	(3)
Sex household head (male = 1)	−2.250	−0.023	−0.267
	(1.156)	(0.190)	(0.314)
Age household head (years)	0.054	−0.013	0.001
	(0.030)	(0.005)	(0.007)
Education level (years finished)	0.088	0.013	−0.004
	(0.092)	(0.017)	(0.024)
Farming as main occupation	1.486	−0.087	0.712*
	(1.246)	(0.229)	(0.406)
Land owned (ha)	0.192	0.001	0.110***
	(0.173)	(0.008)	(0.039)
Distance to corporative (km)	0.184	0.006	−0.010
	(0.184)	(0.029)	(0.040)
Member	1.840	−0.202	0.457
	(1.532)	(0.216)	(0.313)
Support	3.101	−0.472	−0.621*
	(1.737)	(0.241)	(0.363)
Member*Support	−2.998	0.517	−0.430
	(1.935)	(0.288)	(0.413)
Constant	−5.152	1.105	−1.072*
	(2.831)	(0.190)	(0.593)

Notes: The key variables are: member, support, and the interaction of the two. Standard errors in in parentheses. P values in column 3 correspond to a t-test*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

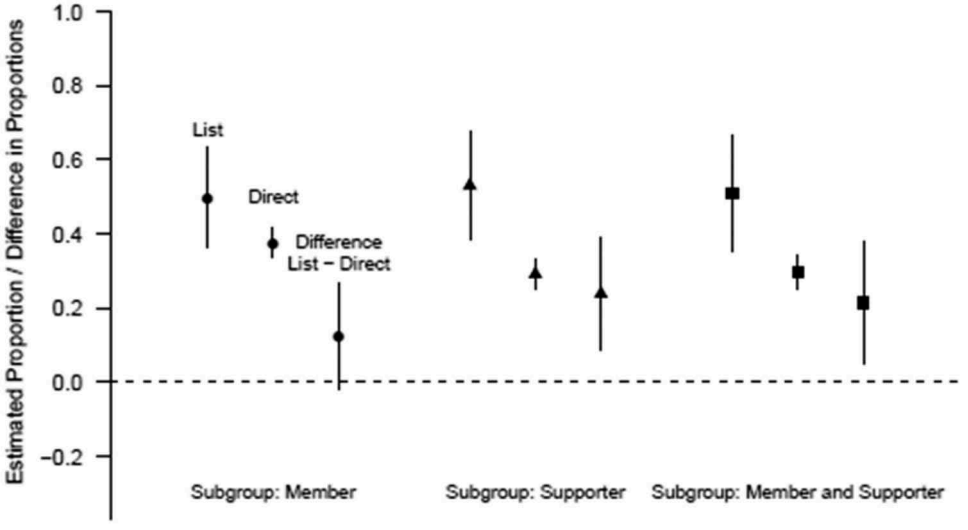

Figure 1. Estimated bias of respondents endorsing the sensitive item.
Notes: The estimates (solid circles = members, triangles = supporters, squares = members + supporters) are based on a logistic regression model for the direct measure and the proposed maximum likelihood regression model for the indirect measure from the list experiment. Both models contain the three variables member, support, member +support as well as a set of controls: gender, age, education, main occupation, land owned, and distance to the co-operative. The 95 per cent confidence intervals (vertical lines) are obtained via Monte Carlo simulations.

(column 1) indicate that members and supporters are more likely to state that the FMO is a weak organisation.[6] However, the interaction term is negative for respondents who are members and supporters.

Figure 1 displays the results of our subgroup analysis. The subgroups of interest are along the x-axis, and the proportion of respondents who believes that the FMO is weak is along the y-axis. The bars around each estimate represent 95 per cent confidence intervals. We use 10,000 Monte Carlo draws to estimate confidence intervals on effects and differences in effects.[7] We here see that for the subgroups of supporters, and supporters who are members, the difference between the list experiment estimate and the direct question estimate is greater than zero, by 22 percentage points and 20 percentage points, respectively. For the subgroup of members, we observe a bias of 16 percentage points, however, not significant.

We conclude that FMO managers, policy-makers, and donors have to take into account the fact that perceptions regarding local support for their initiatives are not easily measured. If donor/government investments are not matched by local fees or commitments, it is relatively easy for interviewees to provide an opportunistic answer or to give in to social pressure and provide the desired answer. Regarding the assessment of FMO services similar restrictions predominate. In particular, the answers of ostensibly strong supporters are biased. This result is important for FMO management as we expect that their actions are especially based on the convictions of strong supporters. These findings help us explain why so many of these FMOs fail to show a promising growth path: the members and supporters themselves are far less optimistic about the venture than their expressed perceptions indicate.

7. Conclusion

The results confirm that social desirability and opportunistic behaviour, bias the responses given to questions regarding the strength of the FMO. A list experiment is a powerful method to identify this bias. It also shows that in particular those respondents who express support for the FMO when asked

directly tend to lie more often. In order to identify their true opinion we use a list experiment format to obtain less biased answers regarding the sensitive issue.

The results help us to understand why further growth of FMOs in Africa is lagging behind expectations. Even though farmers are quite positive about the services the FMOs provide, their sales to the FMO are below expectations, and more than 50 per cent of the members never sell through the FMO organisation. This hampers further development of these FMOs and certainly restricts their ability to realise necessary investments to upgrade their resources, which further explains the stationary state in which many of these FMOs survive.

The importance of this topic lies in the fact that FMOs and their donors are misled if support for the FMO is based on direct questions. Advocates of FMOs interpret the favourable opinions as support and defend their initiatives to establish FMOs, while opponents refer to the limited use of the services. This ambiguity hampers FMO managers, policy-makers, and donors who try to base their actions on realistic prognoses of existing support by targeted members. Actual selling behaviour is a strong proxy for the farmers' perceptions. Sales however only become clear ex post, while it would be better for FMO managers and donors to know the attitudes ex ante. As FMOs have to compete with private traders and economies of scale are required to make attractive offers to members and non-members, a committed member base is needed.

Although we acknowledge the resource constraints of smallholders and the risk of selection, we also consider the research outcome a serious plea for a strong ex-ante commitment signal of farmers who want to become a member: a considerable membership fee and/or requirements regarding sales to the FMO. Of course, this may result in selection and it may possibly depreciate the importance of the FMO as an instrument to reduce poverty. We argue that this latter claim requires nuance, as open membership and open access to FMO services fuel opportunistic behaviour, which in the end concerns a larger threat that may explain why so many FMOs are characterised by weak management and a constrained resource base. The effect is indeed that FMOs become less effective instruments in the struggle against poverty. We conclude that proper selection or competitive screening of members is needed to build efficient FMOs.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. In the literature, the M in the abbreviation FMO may mean Market or Marketing. We prefer to use Market in this context as FMOs are not only involved in marketing their surplus but also in getting access to inputs, including credit, and extension services. Moreover, the integration of all kinds of activities regarding the selling and processing of output goes beyond the marketing perspective. In line with Bernard et al. (2008a), we distinguish community oriented co-operatives from market oriented co-operatives. The FMOs under study are considered to be market oriented co-operatives. Due to the external support from NGOs these FMOs were able to distinguish themselves from the traditional multipurpose co-operatives that the Ethiopian government generally supports.
2. Each respondent was presented with the statement 'The FMO strengthens the position of smallholders in the market' and was asked to rate the statement from 1 (totally disagree) to 5 (totally agree). This statement was designed to reveal whether the respondent showed strong support (5), support (4) or no support (1, 2, and 3).
3. We checked for differences between the group of supporters and non-supporters. The balancing tests are available upon request. Only one significant difference (distance to the woreda market) is observed.
4. See also Blair and Imai (2012) for a further explanation and use of the regression methodology for analysing list experiments. Corstange (2009) also provides a multivariate method for modelling list experiments, but this requires an additional independence assumption and a procedural change in the administration of the list experiment.

5. The dummies for members and strong support, along with their interaction, relate these results to the results obtained from the standard difference in means estimator presented in Table 6.
6. A standard Wald test is applied to assess statistical significance of the individual estimates. For testing joint significance, a likelihood ratio test can be applied.
7. We apply the same approach as Blair and Imai (2012) to calculate our confidence intervals. That is, we first sample parameters from the multivariate normal distribution, where the mean is set to the vector of parameter estimates, and the variance is set to the estimated covariance matrices. Second, we calculate the quantity of interest, using equation 14 in their paper (p. 56). Lastly, we average over the empirical distribution of covariates for the entire data.

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Table A1. Descriptive statistics: treatment versus control

	Whole sample		Treatment		Control		Balancing tests
	N	Mean	N1	Mean	N2	Mean	(3)-(5)
Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Sex household head (male = 1)	683	0.902	324	0.914	359	0.891	0.022
							(−0.974)
Age household head (years)	682	46.977	323	46.966	359	46.986	−0.020
							(0.020)
# Adults	683	3.523	324	3.577	359	3.474	0.104
							(−0.793)
Household size	683	7.331	324	7.475	359	7.201	0.275
							(−1.305)
Household Muslim (yes = 1)	683	0.539	324	0.528	359	0.549	−0.021
							(0.548)
Household Christian (yes = 1)	683	0.461	324	0.472	359	0.451	(0.021)
							(−0.548)
Education level (years completed)	683	4.477	324	4.63	359	4.34	−0.290
							(−0.953)
Household illiterate (yes = 1)	683	0.275	324	0.253	359	0.295	−0.042
							(1.232)
Household head with some elementary education	683	0.264	324	0.272	359	0.256	0.015
							(−0.454)
Household head with some secondary education	683	0.299	324	0.296	359	0.301	−0.005
							(0.129)
Farming as main occupation (1 = yes)	683	0.937	324	0.944	359	0.930	0.014
							(−0.756)
Land owned (ha)	683	3.041	324	2.899	359	3.169	−0.270
							(0.583)
Distance to woreda market (km)	683	10.021	324	9.853	359	10.172	−0.320
							(0.699)
Distance to all weather road	683	1.635	324	1.494	359	1.766	−0.269*
							(1.681)
Distance to co-operative (km)	683	2.084	324	2.127	359	2.046	0.081
							(−0.502)

Notes: Columns 3 and 5 present the mean of the control and treatment group, respectively. Column 6 shows the coefficient from a balancing test between the two groups. T-stats in parentheses. ***Significant at the 1 per cent level. **Significant at the 5 per cent level. *Significant at the 10 per cent level.